

Biosafety and Beyond

GM Crops in India

India is on the verge of approving a genetically modified food crop, Bt brinjal, for large-scale trials in the country. The unbridled proliferation of illegal Bt cotton in the country is already proof of serious regulatory failure and, elsewhere too contamination of the supply chain due to crops in field trials is on the rise. It is pertinent to ask questions about the biosafety regime in the country and look at larger issues beyond, including whether GM technology is needed at all.

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On May 23, 2006, India received a notification from the US through the WTO Committee on Technical Barriers to Trade, which expressed American concerns, reservations and objections on India's move to label and certify GM foods. The main "principle" on which US has begun questioning not just our trade policy and import guidelines related to GM but internal regulation of genetic engineering and the Environment Protection Act's relevant rules is that of "substantial equivalence".

In the context of the US repeatedly using the WTO's binding rules to put pressure on national governments in its worldwide promotion of GM crops, the WTO's

notification to India should make national regulators in various ministries of the government of India to define strongly and clearly a sovereign policy that looks at biosafety as well as issues beyond to be applied uniformly for imports, exports as well as domestic production.

Another important context requiring us to re-look at biosafety is the fact that India is on the verge of approving a GM food crop for large-scale trials in the country. This is the second time in Indian GM history, after Bayer's GM mustard was turned down in 2002, that a food crop, that too a vegetable crop, has come so close to commercial release. Nowhere else in the world has Bt brinjal reached such an advanced stage of experimentation. It is not out of place to remind readers that at

this stage of large-scale field trials, it is mostly agronomic evaluation that counts, since it is claimed that biosafety tests have been completed. It is also important to recall that it was at the field trial stage that the first discovery of the contamination of Indian cotton with illegal Bt cotton was made in Gujarat in 2001 and since then, the unbridled proliferation of illegal Bt cotton in the country has been proof of serious regulatory failure. Elsewhere outside India too, contamination scandals with crops in field trials contaminating the supply chain are on the rise now. Therefore, there is much concern that these large-scale trials could become synonymous with commercial cultivation permission too, with illegal contamination from Bt brinjal trials being a distinct possibility!

All the major farmers' organisations in the country including the All India Kisan Sabha, Bharatiya Kissan Union, Bharat Krishak Samaj (the ruling party's own farmers' wing), Shetkari Sanghatan, Andhra Pradesh Rythu Sangam, etc, have questioned the very need to introduce Bt brinjal or other GM food crops into the country. What is the crisis in brinjal production in the country that this technology has to be brought in, they want to know. They point out that it is in fact

over-production of the crop and lack of market support that is a problem for farmers now. Similar is the response from various organised consumer groups including Consumer Coordination Council, a national federation of consumer groups. On the other hand, a US-led consortium is backing the entry of Bt brinjal into the country, claiming that it will benefit farmers. This includes USAID, which wants to influence agricultural production technologies and decision-making pertaining to them in India through a variety of channels including public sector research institutions.

While the presence of the Bt toxin in Bt brinjal, a crop that is consumed with little or no processing, is causing concern, there are other developments – the Bt cotton front gave us a good taste of what to expect from GM crops – that cause fresh concern about GM crops. Amongst these are recent reports on adverse impacts of Bt cotton on human health from Madhya Pradesh and on livestock from Andhra Pradesh.

Given this situation, it becomes pertinent to ask questions related to the biosafety regime in the country (what constitutes "biosafety" and the enforcement of regulations related to biosafety) and other larger issues beyond, including decisions on whether GM technology is needed at all,

even if biosafety tests in their given framework show that the crops are "safe".

Biosafety Regime in the Country

Biosafety is an important consideration with transgenic crops since they have known environmental and health hazards as scientific evidence from all over the world shows. What is worse, unlike in the case of other agricultural technologies, these transgenic seeds and plants, once released into the environment are irreversible and are "living". That is the reason why critics advocate a precautionary approach to this technology.

As various reports indicate, especially the human health study and the livestock mortality reports, there are serious shortcomings in the biosafety testing of the country. In terms of the enforcement of the regime as it exists, there are numerous reports which have repeatedly pointed to serious biosafety violations and the regulators have proven themselves incapable of fixing accountability in each such case.

Coming specifically to what constitutes biosafety in India, it falls woefully short of testing for the actual potential dangers that lie ahead with the introduction of GM crops in the country. Given that we

are a country with a majority of our population still dependent on agricultural livelihoods, the importance of assessing the need and safety of a technology in an "early warnings system" (for the precautionary principle to be invoked) need not be overstressed.

In India, a set of mandated tests to appease the regulatory system are required to be taken up by the promoting agency and data brought back to the regulators, mainly the Review Committee on Genetic Manipulation (RCGM) in the ministry of science and technology and the Genetic Engineering Approval Committee (GEAC) in the ministry of environment and forests, in the name of biosafety.

Such biosafety tests are done simultaneously even as permissions for farmer-level field trials are allowed! It has been brought out through many civil society investigations that this system has, in effect, led to serious biosafety violations, including the untested produce from the trial plots contaminating the regular supply chain, given the absence of monitoring of the company and its trials by the regulators. No liability has been fixed for such violations pointed out till date. There are no signs of any improvements in the monitoring mechanisms or capabilities to enforce even the limited scope of the current biosafety framework.

These biosafety tests very often are flawed in their protocol and scope for safety testing with regard to the environment, other unintended living organisms, human health, etc. These tests do not capture any medium- or long-term impacts.

To take a few examples, feeding tests have so far been done only on cotton seed in the case of Bt cotton and fruit in the case of Bt brinjal, forgetting that in reality, farmers graze their animals on foliar material in an open grazing situation. Further, such feeding tests are done on goats, which are known to be hardy animals and not sheep. This was one of the lessons learnt from the sheep mortality reports that emerged after grazing on Bt cotton.

In the case of pollen flow studies, such studies have been taken up for just one year and only in two locations in the case of Bt brinjal, knowing full well that there are a variety of factors that affect cross-pollination and that brinjal is known to be cross-pollinated up to 48 per cent. It is to be noted here that India is the centre of origin for brinjal and any gene transfer/contamination from transgenic plants could prove to be disastrous for the crop itself. As the case of Bt cotton shows, decisions are not based on the worst case scenario,

unlike the stringent standards applied for seed production in the country.

In the case of health-related tests, it was only due to civil society investigations that the cotton fibre of Bt cotton was known to be causing a lot of allergies. This was however not tested during the biosafety testing of Bt cotton. Similarly, no multi-generational effects are sought to be understood or any reproductive health effects. As we have discovered in the case of pesticides, the sub-lethal effects are equally or more damaging to human health than just the acute effects.

When it comes to impacts on soil health with Bt plants, if the company says that there has been no persistence of the toxin or presence of the toxin found in their studies, the regulators are willing to take their word for it, even though there are many other studies elsewhere, which show that the toxin leaves its impact on the soil! There are no studies mandated which, for instance, look at the effect of a Bt crop on the subsequent crop, over a three to five-year period.

This makes several civil society groups ask, "What is the great haste? What is the crisis in the production of Brinjal, for instance, that merits such unseemly haste?"

Re-looking at Technology Policy and Decision-making

All of this brings to question the very model of agriculture research, education and extension in the country by which technologies are thrust down our throats. Where are farmers in the decision-making related to agricultural models and technologies to be adopted? Do democratic processes of paying heed to a large majority of stakeholders have any place at all in the current system? Have we learnt any lessons from the earlier green revolution about technology policies and decision-making processes as we stand on the threshold of what is being called the "second green revolution"? Do we have anything to incorporate about the shortcomings of a short term, narrow vision related to agriculture from the ecological disaster and technological fatigue witnessed all over the country today?

India has apparently adopted a case-by-case approach to evaluating GM crops. It is not clear where and how such a policy was decided, however. This case-by-case approach does not ask fundamental questions on whether some GM solutions are needed at all! This approach allows any promoting agency to do a mandated set of tests and trials for a mandated period to walk

up to the regulators and get permissions based on the data that they present. It has to be noted that all such data is created by the promoting agency itself, either directly or through funded studies. There is no independent research worth its name, despite the presence of such a huge research establishment in the country and expertise in a variety of fields. Any agency can pick up any crop for incorporating any trait and just advance from one stage of research to the other and get permission for commercial application! The rest of the country is only allowed to be a mute spectator most of the time or allowed to give some feedback on some data put up selectively.

There is no coherent policy by which such technological decisions are taken through a widespread debate on the need for GM crops in this country, in which conditions, why and so on. For instance, in the case of Bt brinjal, there is ample evidence and experience within the ICAR establishment that shows that non-chemical IPM methods have yielded equal or better results than the ones being claimed by the Bt brinjal promoters! In all GM crop testing so far, comparisons are made with the worst possible scenario and not the most successful safer, affordable alternative already present. There are thousands of practising organic farmers in the country who know how to take up pest management in brinjal without causing environmental and health problems for themselves and others. However, the powers-that-be have always chosen to ignore such experiences. Even a cursory glance at this approach of increasing farmers' dependency on external resources for everything starting from pest management would show you its connection to increasing farmers' suicides and agrarian distress in the country. Even if no significant environmental and health impacts have been discovered through the limited scientific framework biosafety testing that is done, impact assessment of the technology should be more comprehensive.

There are other countries like Norway which ask pertinent questions that go beyond biosafety like, "is this socially and ethically justifiable?" as the regulators look at impact assessment of GM crops. For answering such questions, they also adopt widespread, broad-based democratic processes of eliciting views and expert opinions. It would be good if our regulators and powers-that-be realise that this question is more relevant and important here, in today's context of Indian agrarian distress, than in Norway. [27]

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